

## Patent Abstracts of Japan

PUBLICATION NUMBER : 63278671  
PUBLICATION DATE : 16-11-88

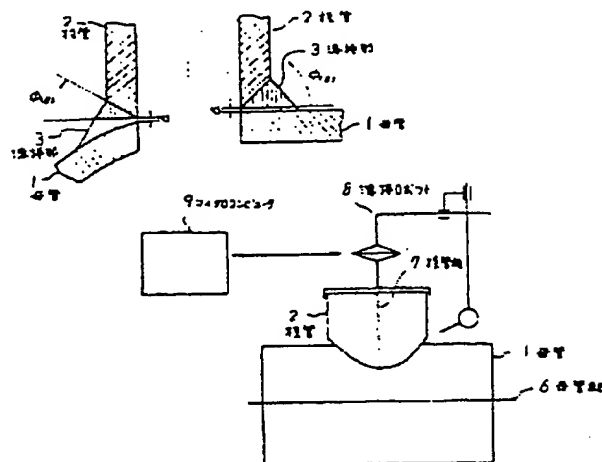
APPLICATION DATE : 07-05-87  
APPLICATION NUMBER : 62111568

APPLICANT : MITSUBISHI HEAVY IND LTD;

INVENTOR : SHIMIZU YUJIRO;

INT.CL. : B23K 9/02

TITLE : SADDLE-TYPE WELD LINE WELDING  
METHOD FOR PIPE INTERSECTION  
PART



$$\varphi(\theta) = \tan^{-1} \left( \tan \varphi_0 - \frac{2}{t} \sqrt{R^2 - (r-t)^2 \sin^2 \theta} + \frac{2}{t} \int_{r-t}^R \sqrt{R^2 - x^2 \sin^2 \theta} dx \right) \quad (3)$$

ABSTRACT : PURPOSE: To improve the welding workability by fixing a groove cross section between the branch pipe groove face and the base pipe surface extending over a full circle of a joint to perform the welding.

CONSTITUTION: A bevel angle  $\varphi$  of a branch pipe 2 is expressed with a formula 1 as a function of its coordinate angle  $\theta$  and a welding robot 8, a microcomputer 9, etc., are arranged in combination. The lower edge of the branch pipe 2 is formed to a shape having the level angle  $\varphi$  based on the formula 1 via an NC gas cutting machine, etc., and then, the edge penetration along the base pipe outside diameter is carried out. The groove shape dimensions such as a groove width, a groove angle, etc., in case the branch pipe 2 is fitted to the base pipe 1 and the tack welding is performed are calculated. Next, the object position of the welding at the time of the automatic welding via a robot 8 and a computer 9 is calculated to perform the welding. By this method, since the welding with the fixed groove cross section is performed, the full-circled welding can be performed with the same number of beads. Accordingly, the welding workability is improved.

COPYRIGHT: (C) JPO